Fall 1955

MONTANA Wildlife

VOL. V — No. 3 Montana Fish and Game Department Official Publication

Sun River Elk

MONTANA FISH AND GAME DEPARTMENT

Official Publication

State of Montana

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Our Cover – *from an original drawing by Vern Craig*

The regal Rocky Mountain Bighorn Sheep **(Ovis canadensis canadensis)** is on the road back. Once near extinction along with a sub-species, the Audubon Badlands Sheep which disappeared from the Missouri Breaks in 1916, the bighorn appeared doomed. However, better game management practices reduced competition with other species for critical winter range. Trapping and transplanting opened new vistas for the mountain rams, and accelerated law enforcement programs together with a changed outlook by Montana citizens protected the remnant herds.

Today the future of the bighorn is bright. Hunting, as a result of new legislation in 1951, makes a controlled yearly harvest possible. In this way, the herds are kept in balance, and the old surplus rams become sportsmen's trophies.

Montana Wildlife

Vol. V | Mary Moore, Editor | No. 3

Vernon Craig, Artist

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EDITORIAL:

How Many Gunnery Ranges?

There are only two things that are above criticism these days — grandmothers and national defense. We'll go along with the grandmothers, they are nice people. And we certainly recognize the need for strong national defense.

However, we can't help but wonder if the armed forces aren't going overboard in their demands for more and more gunnery ranges. For the past year, conservation interests have been advised of the attempted encroachments on wildlife sanctuaries, wilderness country and other valuable lands for use as gunnery practice ranges.

This came home to Montanans this summer when the Navy was considering using 100 square miles of the Fort Peck Game Range for practice and testing grounds. (Incidentally, we hear they are back.) If this could be shown to be an essential use, conservationists certainly would sacrifice the newly-developed bighorn sheep herd, some of the best deer hunting in North America and the other wildlife resources of this region.

But we ask the question — does each unit of national defense need to tie up thousands of valuable acres of land when, with a minimum of cooperation and planning, each could use a smaller number of areas interchangeably?

As an indication of the encroachment being attempted on wildlife areas, we have the following partial list which has received national publicity:

Most widely protested was the Army's sneak attempt to pirate 10,700 acres of the Wichita Wildlife Refuge to expand Fort Sill and destroy a top recreational area.

The Navy has a proposed withdrawal of nearly a million acres in California of which about one-third lies in Death Valley National Monument. This would be an air-to-air gunnery range.

In Texas, the Air Force had a request to close part of San Antonio Bay and the Gulf of Mexico for photoflash bombing practice. This, it is reported, would drive game from the Aransas National Wildlife Refuge, the last remaining winter refuge of the almost extinct whooping crane. This species would in all probability be doomed, and other species of waterfowl would also be adversely affected. This plan, we understand, has been blocked by conservation interests.

There are many huge areas now established for military maneuvers and practice, and these without known exception have been barred from the public, and in many instances, have become private hunting grounds for armed forces officials. One area even has a complete staff of game wardens and game management men selected from the services to provide private hunting for men on the base.

So we go back to our original thesis: Let's not throw away our natural resources, our wild lands and national monuments, if there is any possible alternative. While we recognize the urgency of the moment in national defense, we must also consider that happy day in the future when the constant expansion of armed services will not be necessary. Then we will need even more the recreational areas and our wildlife.

We would like to see a really earnest attempt made to establish a few gunnery ranges for the cooperative use of all segments of the armed forces. After all, in a war, the Army, Navy, Marines and Air Force work together—why not get a little practice in peacetime?

Montana Sportsmen's Projects

(Twelfth in a Series)

RAVALLI COUNTY FISH AND WILDLIFE ASSOCIATION

"Public sentiment is everything; with public sentiment nothing can fail, without it nothing can succeed."

(Montana Wildlife Federation)

This significant statement quoted from the Federation's educational program has been made a reality by one of the organization's member clubs, the Ravalli County Fish and Wildlife Association.

The Club's Educational Committee with an annual budget of $500, has brought resource management problems to Bitterroot Valley residents through a variety of approaches. Chief among these is a Conservation Book Section at the Hamilton Public Library.

The Library project was started in 1951 when a book shelf was planned at the County Library and books supplied from a fund set aside for that purpose. Each year, additional books and periodicals have been donated to the library. In 1954, a special bookcase was set up with a suitable plaque designating the corner as the Conservation Library.

At present, the library contains 157 books on conservation subjects, both popular and technical, with reading material for every age level.

In addition, regular subscriptions for ten of the most important periodicals provide a current file and reference on specific topics. Included in the display rack are "The Journal of Wildlife Management," "The Living Wilderness" and "The Natural History Magazine."

But maintaining the library does not insure that the information it contains will reach all who might be interested in conservation. Therefore, the club distributes its literature by means of a mobile library, a mailing list and a special rotating system.

The educational program of the Ravalli County Fish and Wildlife Association started in 1949.

"This program became an obvious necessity to club members when they realized that sportsmen would have

to become interested and informed in sound management practices for the Bitterroot Valley," according to one of the club's officers. "Such practices are vital if the recreational resources of the Valley are to be fully enjoyed by the present generation and still left as a heritage for future generations."

Nor is the Library Project the only activity of the Educational Committee.

Its other accomplishments include sponsoring adult education forums, organizing and directing panel discussions on problems of resource management, assisting at 4-H camps, preparation of county fair exhibits, sponsoring conservation contests and prizes.

Behind this outstanding sportsmen's project is some basic thinking and planning. It should be an encouraging sign to ranchers farmers, lumbermen, state and federal officials to find a group of sportsmen interested in learning the fundamental facts of resource management.

This basic approach to an understanding of the problem and needs of wildlife can only result in realization of the objectives designated by clubs to develop an interest and understanding of sound resource management.

The educational program of the Ravalli County Fish and Wildlife Association is offered as a suggestion to other sportsmen's groups which would like to expand their program to include the field of Conservation Education.

More complete details are available for any interested organization by writing to the Ravalli County Fish and Wildlife Association at Hamilton or to the Montana Fish and Game Department in Helena.

Two Hamilton boys, Tom and Roland Peterson, investigate the books in the conservation corner at the Ravalli County Library, supplied by the Ravalli County Wildlife Association.

The Bighorns Are Back!

by

Faye M. Couey, Assistant Coordinator, Wildlife Restoration Division

This year, five hunters were granted permits to hunt bighorn sheep in the Billy Creek area of the Fort Peck game range. These men were able to hunt their trophies in this once-historic sheep range because the Montana Fish and Game Department transplanted sheep into this area eight years ago, where the last sheep was sighted in 1916.

On November 16, 1947, 16 bighorn sheep were liberated in a fenced, 320-acre pasture on Billy Creek, in the heart of the badlands of the Fort Peck game range. These mountain sheep, from the healthy Tarryall herd in Colorado, were planted with the hope of re-establishing mountain sheep in their native habitat.

Results of the project have been gratifying. The herd numbers doubled by the fall of 1949, with two lamb crops. After this acclimatization period, about 16 sheep were liberated from the fenced area. They stayed in the vicinity of the pasture. All the sheep were liberated when the fence was completely removed in October, 1952. At that time, it was estimated that there were approximately 80 bighorns in the Billy Creek area and adjoining drainages.

Since 1952, the sheep have scattered somewhat over the range, and it is presumed the increase has been good. Predators have not been a problem because of the protection afforded by the inaccessibility of the area. It is very difficult to census these animals in the rough, badland terrain, and the population figures are purely estimates, but there may be approximately 200 bighorn sheep in northern Garfield county.

The last bighorn was reported in this part of the state in 1916. Since then, even with the protection of a closed season, Montana's bighorn herds gradually declined. Studies have shown that the ranges had been over-used, reproduction was low, and disease took a heavy toll. An immediate recommendation to improve the situation was to introduce some healthy animals into a good range and hope they would increase with the protection which could be given.

Efforts to establish bighorn sheep in other sections of Montana have been in operation since 1943. Results have ranged from very successful to poor.

Increasing bighorn sheep herds are located in the Sun River, Gallatin, Rock Creek and Wildhorse Island areas. A herd in the Stillwater drainage of the Beartooth Plateau country is in a static condition, the Ural herd in Lincoln county is decreasing, and herds in Glacier and Yellowstone National Parks, and on the Bison Range at Moiese have shown little increase.

Sheep plants in the Big Belt mountains and the Gates of the Mountains were not successful. The principle reason may have been that the animals were not placed in a fenced enclosure, although they were in suitable habitat.

Plants of bighorns were made in the Kootenai Falls and Sixteen Mile area in 1954. Results of these plants will not be known for several years.

Die-off in sheep populations has occurred when the animals faced heavy competition from elk, deer, and livestock for use of crowded winter ranges. Concentrations of bighorns into small areas also encourages and spreads disease such as verminous pneumonia and lung worm infestation, when the animals in natural habitat would be less susceptible to infection.

The five hunters who travelled into the rough, precipitous badlands of northern Garfield county this year were the first to participate in a legal hunt of bighorn sheep in this area since 1914. Recommendations from studies of this species conclude that the taking of a limited number of mature rams might prove beneficial to the herds by reducing the number dependent upon the critical range, and at the same time, provide some rare trophy hunting with the conviction that the herd would not be harmed.

The 1953 Legislature gave the Montana Fish and Game Commission authority to authorize the hunting of bighorn sheep by special permit. In the fall of that year, a total of 30 permits were issued to take mature rams with a three-quarter horn curl; 20 permits for the Sun River area, five for the Gallatin and five for the Stillwater. Hunting success was approximately 65 percent.

In 1954, 53 permits were authorized by the Department. In the Sun River, 19 of 20 permits were filled; 8 of 15 in the Gallatin; 4 out of 8 in the Stillwater; 5 of 5 in the Rock Creek area west of Drummond; and 3 of 5 in the Ural area of Lincoln county. Hunting success in 1954 was fairly high, avering 73 percent. The closing date of the season was extended from November 15 to December 12, allowing time for the rams to concentrate near the winter range during the rut period. Easier, but less sporting, hunting was provided for the permit holders.

Approximately the same season was in effect for 1955, with the addition of five permits for the Fort Peck area. No season extensions were granted for this species this year.

Several other areas in the state are proposed as release sites for bighorns in an effort to get more healthy herds started. In selecting these new planting sites, consideration will be given to present range, avoiding competition from other animals, adequate cover, protection and historical use by bighorn sheep.

61 YEARS ON BULL MOUNTAIN

by
William T. Sweet, Butte
Montana Fish and Game Commissioner

I killed my first deer in Farnum Gulch, on the slopes of Bull Mountain, between Boulder and Cardwell in Jefferson county when I was a boy nine years old.

That was 61 years ago, and I still think Bull Mountain is the most beautiful range in the west.

My father came up the Missouri to Fort Benton on a steamboat in 1864, drifted west with an ox team and homesteaded a ranch in Boulder Valley which runs parallel to the mountain. I grew up there and some of my earliest memories are of the stories my father told us of the abundance of elk, deer, bear, mountain sheep and moose on the mountain in the early days.

In my youth, the elk were gone but deer, bear, grouse and other game were still very plentiful. Some of the best hunting I can recall we had on our trips to Bull Mountain after blue or Richardson grouse when I was a boy.

The mountain is noted for its lovely open parks and it was not unusual for us to see 500 grouse in a day in the pine and fir timber surrounding them. Often we lugged home a gunny sack full at the end of a day's hunt, never thinking the species would some day decline and require a definite management program to assure its perpetuation.

As a kid, I well remember my brother Chet, who with the Berkin boys killed and sold deer for a living. They hunted mostly in the low Dunn Hills where deer wintered because of the light snowfall.

There were no game laws at that time, and I have seen them come through Boulder each week with an old stagecoach drawn by four horses with a load of frozen deer stacked like cordwood. They sold the deer in Helena for $5 apiece, and be it said to their credit that they gave many away to hungry families who couldn't pay the price for fresh meat. As for market hunting, nobody thought there was anything wrong with it then.

The deer herd soon began to shrink, however, but for a time no one knew why and there was no alarm in the decrease. Even when the Montana legislature finally enacted game laws, the season limit was six deer at first.

Later that was reduced to three and then to one. Deer began to increase

and today the deer hunting on Bull Mountain is as good as can be had anywhere in the country. As with the grouse, management came in time.

The elk on this mountain were exterminated in the early days and for years there were none. But in 1911, a group of sportsmen at Boulder collected enough money to pay transportation charges at $5 per head on two carloads of elk from Yellowstone Park.

Each carload consisted of 34 animals. Released and protected for several years, the elk thrived. The high elevation, just over 10,000 feet at the peak, open parks, big timber, abundance of feed and pure mountain springs were exactly what the imported animals required. Today this area provides some of the finest elk hunting in Montana.

My wife Lou, who has been my lifelong hunting partner, killed a record head on the slopes of the mountain almost 30 years ago. More recently, in 1953, Bull Mountain contributed another record elk head. This one, the largest ever taken in Montana, was shot by John Willard, outdoor writer, along the Boulder River where it had drifted from its haunts on the timbered mountain three miles away.

Bull Mountain has had its share of bears, mountain lions, bobcats, wolves and coyotes, too.

My father used to relate how he was hired in the early days to guard the charcoal pits at Elkhorn, now a ghost town, from bears. He patrolled each night with two dogs and had many encounters with what he called "silvertips," but what I believe were a color phase of the black bear rather than grizzlies.

Later, on this same mountain for several winters, Clarence and Roy Murray took annual catches of predators averaging 150 coyotes, 50 bobcats and 10 lions. It was they who killed the last wolves in that part of Montana, a pack of five that had taken a heavy toll of cattle in the area.

Few sportsmen know it today, but the mountain once harbored a herd of bighorn sheep and produced some fine heads.

Looking back now on 61 years of hunting on this beautiful mountain, when I recall the early plenitude of game, the scarcity that followed and the better days of recent years, it is my earnest hope that my successors on the Montana Game Commission will continue to manage the wildlife of this area wisely for the benefit of future generations. Given the chance, Bull Mountain will do its share to provide for our children and grandchildren the kind of hunting that has delighted Lou and me and so many other sportsmen fall after fall as far back as I can remember.

But denied the right kind of wise management, the game herds inevitably will dwindle down again—on Bull Mountain or anywhere else in Montana.

MONTANA'S WILDLIFE DISTRICTS

A million dollar business covering an area scattered over 148,000 square miles could not operate effectively from a headquarters located hundreds of miles from certain sections of its territory. This handicap became apparent in the management of Fish and Game Department affairs during the past several years.

The need for decentralization resulted in a major reorganization of the Fish and Game Department's field activities. The development started in 1946 with a separation of law enforcement personnel into seven districts, each under the direction of a District Warden Supervisor. This change was completed in 1954 when it was apparent that other phases of Department activity should also operate in a district rather than on a project basis, as in the past.

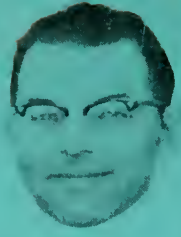
The key to the new operation is a three-man team — the warden supervisor, the district fisheries biologist and the district game biologist — working in each of the seven districts with headquarters located at Kalispell, Missoula, Bozeman, Great Falls, Billings, Miles City and Glasgow. These men represent the three major activities of the Department— game management, enforcement and fisheries management. Each man has a separate area of district responsibility, but programs are coordinated.

One of the primary objectives of such a district organization is to initiate the closer teamwork between all Department divisions at the district level. Greater unity in the organization can only result in placing more force behind fish and game management operations.

Men selected to fill the positions have a background of experience and training which particularly qualifies them for the work of carrying out Department policies and functions in the seven districts.

To facilitate district operations, a headquarters building is maintained in each of the seven areas, which houses district vehicles, an equipment pool and furnishes office space for personnel.

The new system provides faster action on local problems in each area by placing increasing responsibility in the field. The result is greater efficiency in all phases of wildlife management.



WILDLIFE DISTR

District 1. Frank Stefanich (t
Blair, Game Biolog
Supervisor.

District 2. Merle Rognrud (rea
Lewis, Warden Su
Fisheries Biologist.

District 3. (Top) Gene Sherm
Boyd Opheim, Fish
send, Game Biolog

District 4. (Top) Nels Thoreso
Brown, Warden Sup
Biologist.

District 5. (Top) Boyd Ophei
left) Jack Kohler,
Ellig, Game Biologis

District 6. (Left to right) Richa
Thomas Hay, Wa
Alvord, Fisheries Bio

District 7. (Left to right) Willi
Wesley Woodgerd, G
Warden Supervisor.

CT OFFICIALS

. Fisheries Biologist: Robert and Ross Wilson, Warden

cross), Game Biologist: Orville rvisor and Arthur Whitney,

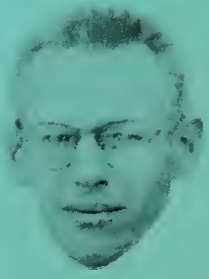
Warden Supervisor: (right) s Biologist and Joseph Town-

Fisheries Biologist: (left) Don risor and Reuel Janson, Game

Fisheries Biologist: (bottom rden Supervisor and LeRoy

Trueblood, Game Biologist: n Supervisor and William ist.

Alvord, Fisheries Biologist: e Biologist and John Nicolay.



The Otter's Diet - Good or Bad?

by

Kenneth Greer, Fur Biologist

Otters **(Lutra canadensis)** have been protected in Montana since the 1949-50 trapping season. There is some evidence that a few are unintentionally taken in traps and there are rumors that some are eliminated by acts of vandalism.

Certain unfounded reports from Lincoln county have indicated that these animals are undesirable. Some fishermen claim they reduce the numbers of trout and bass and thus contribute to poor fishing. Some trappers declare that otters destroy muskrats, beaver and mink.

In order to reduce this hearsay evidence to facts, a study to determine the food habits of the otter was initiated.

This investigation centered around the Thompson Lakes, a group of 31 lakes and streams approximately 40 miles southeast of Libby. Gary's Lake, about 20 miles due north of the Thompson Lakes area, was included for comparison.

Life habits of the otter are such that this animal does not lend itself to frequent observation for long periods. The remaining method of analysis of the otter's food habits was in finding and collecting "sign" left by the otter at places of their shore visits.

By discovering and revisiting these places, known periods of time were established for materials collected which supply seasonal comparison of items found in the diet.

"Pulling out" places (areas on stream banks where otters dry themselves, frolic and congregate regularly) and latrines were located by walking along the shorelines. Most latrines were on the shore but several were on, or near beaver houses. Latrines appeared to be of long-establishment.

When a latrine was discovered, all signs or "scats" were aged, collected and cataloged. Once the location of a latrine was established, it was revisited regularly for scat collection.

Eight were located at Gary's Lake and 88 on the Thompson study area. A total of 1,374 known-age scats were

collected during the period from April, 1952 through May, 1953.

Scats were broken apart and examined under a binocular microscope. The complete scat was searched for recognizable remains in the items of the diet. These were identified by comparison with reference collections of bones, hair, feathers and other undigestible material.

Findings indicated that the food of the otter varies within restricted limits from one area to another. The limited sampling of fish populations by gill netting, electric shocking and fishing did not necessarily indicate the relative abundance of vulnerable populations.

The predominate fish eaten by the otter (sunfish at Thompson Lakes) was not taken in any great numbers by sampling. It was noted while walking the lake shores that sunfish were abundant close to the water's edge during the spring and summer seasons. Selective angling in a few of these places did increase the sunfish catch, but still not in proportion to their occurrence in scats.

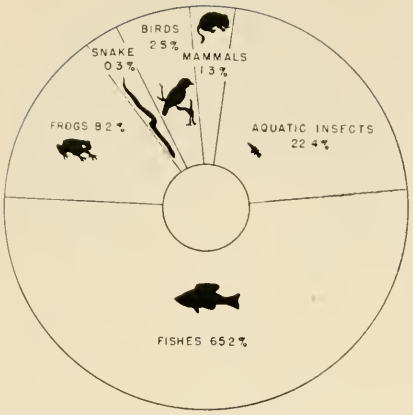
In all probability, the habits of the sunfish during at least some periods, make them more available to otter.

One observation of two otter in a small lake showed their manner of "hunting" to be that of circling the lake rather close to the shoreline. The high incidence of sunfish in the scats at Thompson Lake could possibly indicate a preference for this species, but at Gary's Lake where sunfish are absent, otter were equally abundant and diverted their attention toward other prey.

The populations of bass, trout and shiners as indicated by sampling were also lower than is suggested by their occurrence in scats.

In contrast to the fishes noted above, the squawfish and Columbia River chub did not occur as frequently in scats as their apparent abundance indicated by fishing in pools adjacent to often-used latrines would suggest. At a lake near otter latrines, three hours of fishing resulted in a catch of over 100 squawfish. These fishes were only represented in approximately 15 percent of the total scats.

Whitefish were taken in deep water gill net sets and in greater proportion than their incidence shown in drop-



Percentage composition of items found in otter scats from Thompson Lake area (1,122 scats).

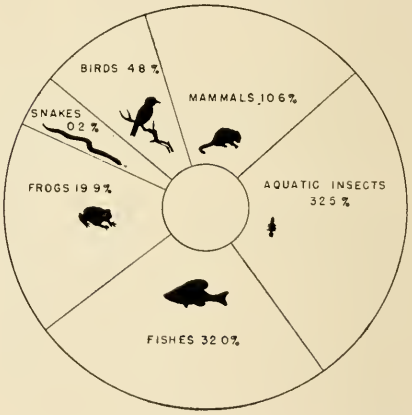
pings. There is an authentic report of the capture of otter in crab pots set in 60 feet of water.

Numbers of perch caught by fishing and gill nets gave an indication of greater occurrence than scat analysis. From scats collected on the lower Thompson Lake, 40 percent had perch remains and 30 percent had sunfish. In the upper Thompson Lake, perch were in 9 percent and sunfish in 91 percent of the scats. The reason for the increase of perch in the diet from one end of the lake to the other is difficult to evaluate.

In some instances, there does appear to be a direct correlation between relative abundance and utilization. The catch of sculpins by shocking seemed proportionate to the occurrence in scats, as did the numbers of suckers caught in gill nets.

Otter predation on fur bearers seemed to be in relation to availability. Gary's Lake had a higher incident of beaver and muskrat than Thompson, and the degree of utilization (occurring in scats) was higher.

The waters of the Thompson Lake region are heavily populated with fish not particularly sought by fishermen. These fish constitute a high percent of the otter's diet. Fishing pressure is light. The resulting facts from this investigation do not justify the conclusion that otter constitute a menace to the sport fishing of the area although they may do some damage locally.



Percentage composition of items found in otter scats from Gary's Lake area (252 scats).

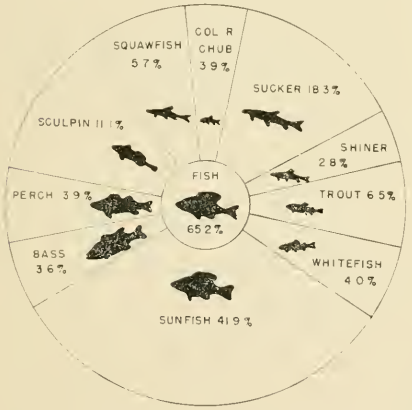
Muskrat remains first appeared in the scats deposited during April for both areas. At Gary's, scats with muskrat reached a peak in June, occurring in 14. Evidence of muskrat was highest during August in the Thompson area, appearing in 5 scats. The predominant occurrence of muskrat remains in the spring and summer

indicate the vulnerability of this species when their numbers exceed the security levels under prevailing conditions.

Of the 8 scats containing beaver remains at Gary's, 5 occurred during April, 2 in May and 1 in August. The two for Thompson's consisted of one each for fall and winter.

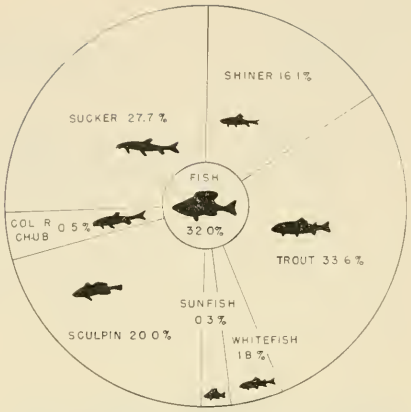
Evidence of mink (hairs only) were found in only one scat from each study area.

The data indicate that otter take some muskrat and beaver, particularly in the areas of high populations, but a modern opinion of predator-



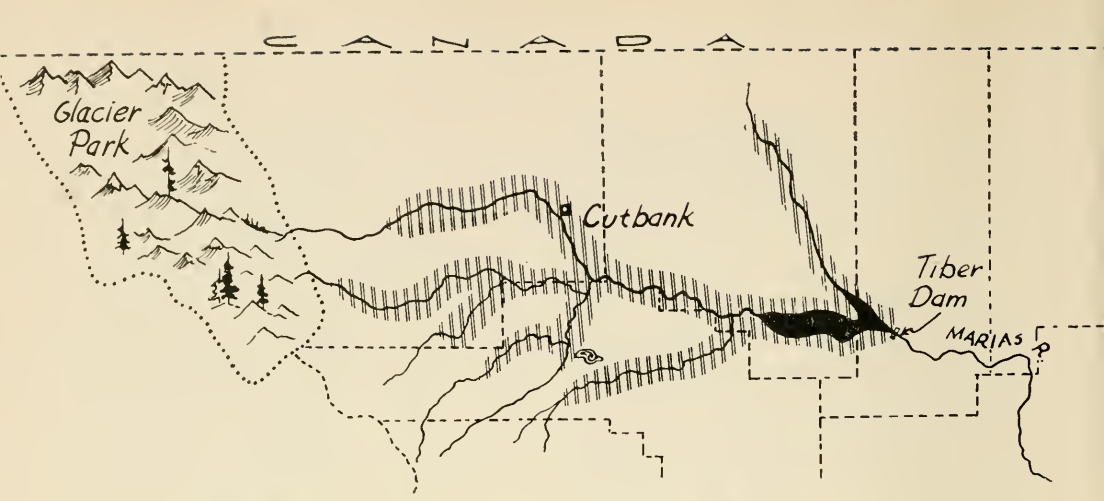
Fishes identified in Thompson Lake area otter scats.

prey relationships suggests this cannot be interpreted as a true population depressant. It is more suggestive of top-heavy, vulnerable populations resulting perhaps from insufficient harvests. It would appear that muskrat and beaver trapping in the Gary's Lake area should be increased.



Fishes identified in the Gary's Lake area scats.

Until a more regulatory control of otter harvests can become effective, the number of otter do not appear sufficient to warrant an open season. There is the possibility, however, that a limited open season might stimulate an increase in reproduction and survival in this population, and create a self-imposed protection on an animal subject to acts of vandalism.



Big Medicine for the Marias

by

Nels Thoreson, Fisheries Biologist

On Saturday, October 15, 1955, the last truckload of earth fill was hauled to the top of Tiber Dam in Liberty county.

A brief ceremony marked the completion of the 205 foot crest of the fill. When the diversion tunnel was plugged, the formation of the reservoir began, and a 25 mile section of the Marias River above the dam began its conversion from a stream to a lake.

Because of the nature of the structure the dam will afford a fishery block in the Marias River and the upper waters will be isolated from the stream below.

With the large population of rough fish already present in the river, the impoundment would probably provide ideal conditions for their reproduction and the reservoir no doubt would be saturated with undesirable fish almost as fast as it formed.

The subsequent spread of carp and goldeye upstream would be a potential threat to trout fishing in the lakes and streams of the upper Marias drainage.

In addition to this problem, the best fishery management of the 22,000 acre impoundment also had to be considered.

Fishery management of large impoundments is difficult where harvest is negligible. Initial treatment by way of rough fish removal and stocking is probably the most effective fishery management the Tiber impoundment will receive.

Restricted upstream pockets of carp infestation was believed to have been damaging the quality of trout fishing. Removal of carp and goldeye in the Marias River drainage was obviously necessary to some degree.

Since various species of suckers are to be found far up into the headwater sterams and lakes, and are not considered to affect trout as adversely as other trash fish, it was not an objective of the project to remove all suckers from the area.

The upper limits of carp and goldeye infestations in the drainage established the upper boundaries of the rehabilitation area. The broad scope of the rehabilitation work and the restricted time in which to do it was brought about by the anticipated 1955 closure of the Tiber Dam.

With known toxicants and existing costs, rehabilitation of the reservoir when filled would not be economically feasible.

The Montana Fish and Game Department recognized the urgency of rehabilitation work before the closure of the dam and the project was initiated last spring.

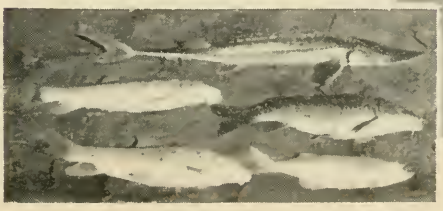
Through stream survey work and especially population census conducted with electric shockers it has been found that many Montana streams have large numbers of undesirable fish and small numbers of trout.

The need for reduction or complete removal of rough unwanted fish prompted experimental stream rehabilitation work on a limited scale. Results of such work provided a basis for estimating amounts of toxicants necessary on the streams in the Marias drainage.

Because only fragmentary information was available, much had to be learned concerning the different methods of toxicant applications during the Marias Rehabilitation Project.

The streams to be treated in the drainage varied from small, cold, clear, rapidly moving and relatively sterile waters to large, warm, turbid, slow, fertile waters.

Different techniques were used but in general, the small streams were completely covered with toxicant by



(Right) A fisheries biologist holds a sturgeon killed by toxicant. (Below) Representative of the species found in the waters of the Marias drainage before the all-out warfare on carp and goldeye, starting at the top, are a sturgeon, carp, sucker, goldeye and red horse sucker.

drawing a sack through the water, by spraying with a back pump or by aerial application or a combination of these methods.

Large streams and rivers were "slugged" at effective intervals, small isolated pockets of water out of the main current were sprayed or "sacked" by hand and larger sloughs and backwaters were aerially dusted, sprayed and "sacked" by hand from a boat.

Isolated pockets of water hidden by brush and trees were often difficult to locate and frequently were found to contain carp.

The Marias drainage within the rehabilitation area covered the greater portion of Toole, Liberty and Pondera counties. As many as 27 men were working at one time in applying approximately 60,000 pounds of toxicant. The main period of application lasted approximately two months.

Trout, whitefish and suckers predominated in the fish killed within the first several miles after initial points of toxicant application. But beyond this, only an occasional game fish was seen and many tons of carp, suckers and other rough fish turned up in the riffle areas and along the shores.

In the lower portion of the Marias near the impoundment area, sturgeon, carp, buffalo, carp suckers and red horse suckers predominated with an occasional catfish or sauger.

Shortly after the toxicant had been cleared out of the tributary streams, replanting was started.

Small fingerling rainbow trout were well distributed along the tributary streams of the Marias drainage. In some of the more accessible locations, larger rainbow trout were planted.

When the impoundment has formed, large numbers of small trout will be distributed throughout in order to initiate as complete a trout fishery as possible within the reservoir.

The Fish and Game Department's Super Cub sprays toxicant over Hope Lake, west of Cut Bank, to aid in eradicating carp and goldeye from the Marias drainage.

Teen Age Delegates . . .

COMBINE EDUCATION WITH PLEASURE ON CONSERVATION RESOURCE TOUR

by Frank H. Dukle, Jr.

A pack trip, ranger-conducted tours through Glacier and Yellowstone Parks, a visit to an oil refinery, and inspection of game ranges were high points in the itinerary of a nine-day, state-wide jaunt made by 11 Montana youngsters in June.

The eight boys and three girls, district delegates of the Montana Wildlife Federation to the 1955 Young Montana Conservationists meeting in Helena in March, were selected for the tour by the Montana Fish and Game Department for their accomplishments in the "wise use" of the state's natural resources.

The touring young Montanans were: Jean Shields, Roundup; Patsy Paugh, McAllister; Arlene Walby, Glasgow; Verle Lanier, Billings; Tom Thompson, Wolf Creek; Duane Sargent, Simpson; John Nickey, Bozeman; James Hill, Nashua; Edward Tilzey, Missoula; Phillip Cook, Creston; and Joe Pepper, Wilsall.

W. K. Thompson, Montana Fish and Game Department, Educational Assistant Frank Dunkel and Game Warden Cecil Gilmore served as drivers, cooks and general handymen. Mrs. W. K. Thompson accompanied the group as chaperone.

Sunday The group gathered in Helena by noon and proceeded to the Cooney ranch on Canyon Ferry Reservoir, 40 miles east of Helena. The fishing was good and their own freshly-caught trout provided a tasty meal for the hungry young people.

Monday Starting on a tour filled with fun and a new-found appreciation of the natural resources of Montana, the group drove to a cabin in the Bull Mountains, overlooking the Boulder River valley, owned by Fish and Game Commissioner William Sweet and his wife. Most of the day was spent on saddle horses, inspecting some Montana elk range.

Tuesday First on the day's schedule was a tour through the Lewis and Clark Caverns, located between Whitehall and Three Forks. After lunch in Bozeman, the party assembled at Montana State College for a look at the Zoology Department and Extension Station facilities. The delegates also visited the new Fish and Game district headquarters for a demonstration of fish shocking methods. The group then travelled to the Rainbow Ranch in the upper Gallatin Valley to meet with representatives of

the Gallatin Sportsmen's Associaton. Joe Townsend, district Fish and Game biologist, discussed the management and future of the Gallatin elk herd and its relation to Montana's economy and recreation. The tourists spent the night at the Porcupine Game Range near Gallatin Gateway.

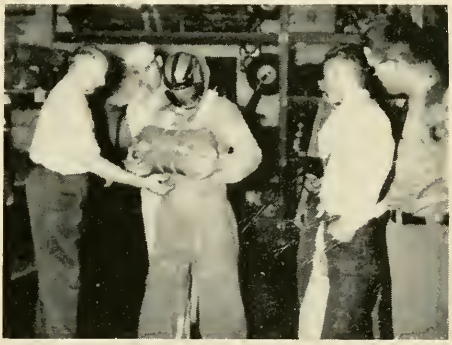
Wednesday At the Elkhorn Guest Ranch in the upper Gallatin valley, the teen-agers heard the philosophy of guest ranchers and their attitudes regarding the "wise use" program of natural resources. During the visit, a herd of horses thundered by the group, creating a very western atmosphere at the ranch. On the way to Yellowstone Park, the group tramped over winter elk range . . . the poor conditions in some sections caused one boy to comment, "Where is the grass?" In West Yellowstone, the group decided to try their fishing luck in the Madison River after watching a fly-casting demonstration by an expert. Unfortunately, no one succeeded in landing a fish. Most of the teen agers had not visited Yellowstone Park previously and were much impressed with the thermal areas, game animals, Yellowstone Lake, Canyon Falls — and especially the roadside begging bears.

Thursday The tour proceeded on schedule over the Bear Tooth Pass between Cooke and Red Lodge. The pass was shrouded in low-hanging clouds but the teen agers were able to observe the different life zones, progressing from forests to high alpine meadows and then to bare rock. After a visit to the "See 'Em Alve Zoo," the group spent the evening with a group of Red Lodge sportsmen.

Friday The party toured the Carter Oil refinery in Billings, led by a company employee who explained refining methods and how the oil industry fits into the scheme of resource conservation. Between Billings and the King's Hill area, the group observed antelope range conditions and examples of good and bad dry land farming practices. A forest ranger from the district explained pulpwood operations and the multiple use program of the U. S. Forest Service. At the Belt Creek ranger station that evening, Nels Thoreson, district Fish and Game biologist, talked about stream degeneration created by road construction and pollution.

Saturday In Great Falls, the delegates visited Malmstrom Air Force Base, the Montana State Fish hatchery, Giant Springs and were interviewed by a local radio station. The group travelled to the Sun River Game Range and spent the night in the shadow of the Rockies. Early the next morning, the young people toured the lower area of the game range to see how range operations affect wildlife management.

Sunday The group continued to Browning for a visit to the Plains Indian Museum before entering Glacier National Park. A ranger-naturalist gave a lecture at Sun Point before the trip over Logan Pass. The last evening of the tour was spent at the biological station operated by Montana State University on the east shore of Flathead Lake. Station officials took the party for a launch trip over the lake where limnology (water) studies were being conducted.



Monday The National Bison Range at Moiese was a morning stop for the delegates where they saw buffalo, including the old albino, browsing in exhibition pastures near the headquarters building. Last stop on the tour was the U. S. Forest Service aerial fire depot north of Missoula. Forest Service officials explained prevention and suppression of fire as it affects the forest resource. To better appreciate the duties of a smoke-jumper, one of the boys volunteered to dress in full fire-fighting regalia. The party also inspected the parachute loft where all phases of parachute repair, handling and packing are concentrated.

* * * *

The success of the tour was insured by the excellent cooperation shown by all groups and organizations which gave generously of time and facilities to demonstrate conservation programs in action.

The delegates gained the knowledge that resource conservation is extremely complex and can be understood only when all phases are considered. Perhaps in youth's understanding lies an answer to tomorrow's problems — for these youngsters are today's hope for the future.

1954
TROPHY AWARDS

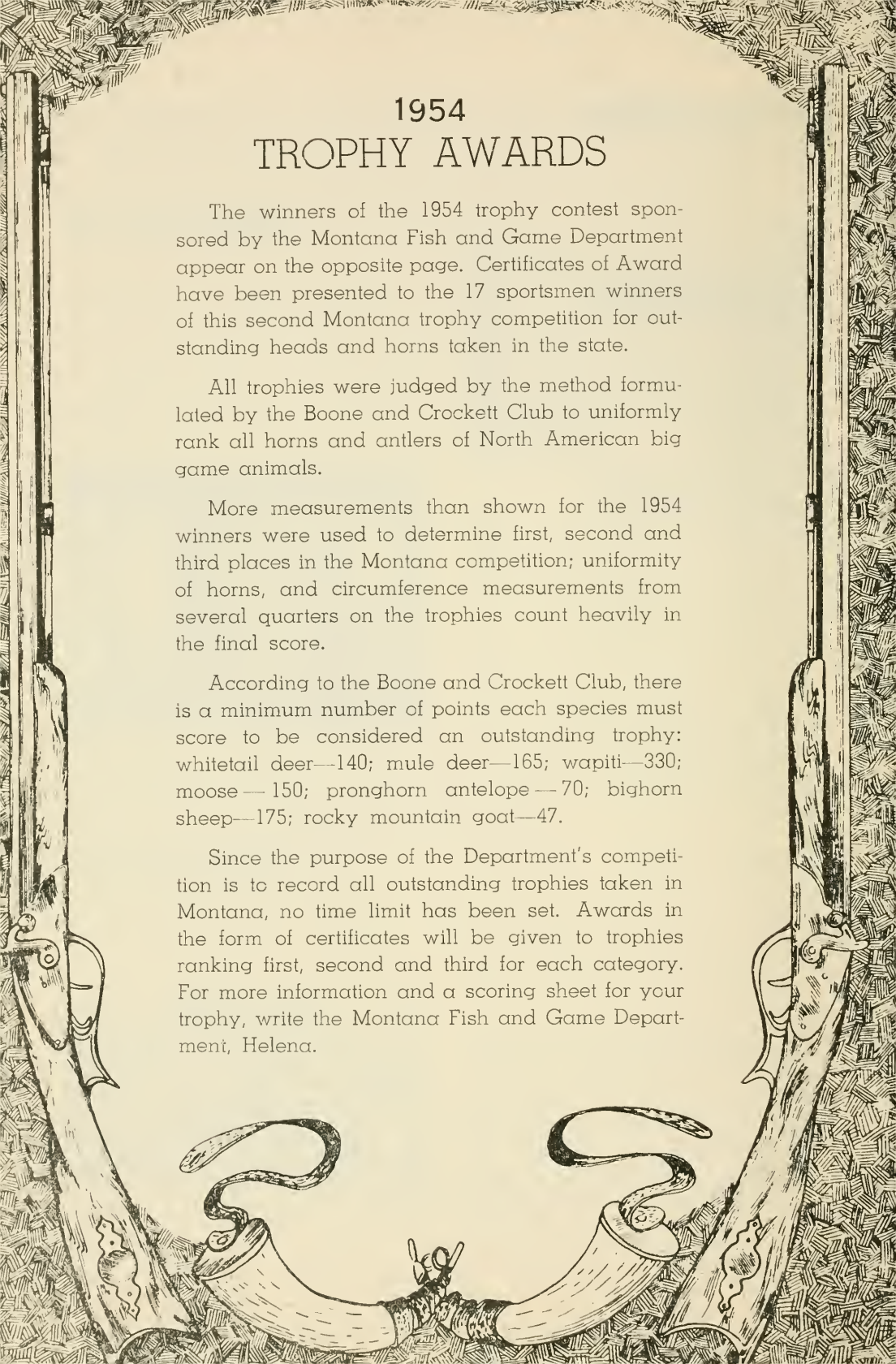
The winners of the 1954 trophy contest sponsored by the Montana Fish and Game Department appear on the opposite page. Certificates of Award have been presented to the 17 sportsmen winners of this second Montana trophy competition for outstanding heads and horns taken in the state.

All trophies were judged by the method formulated by the Boone and Crockett Club to uniformly rank all horns and antlers of North American big game animals.

More measurements than shown for the 1954 winners were used to determine first, second and third places in the Montana competition; uniformity of horns, and circumference measurements from several quarters on the trophies count heavily in the final score.

According to the Boone and Crockett Club, there is a minimum number of points each species must score to be considered an outstanding trophy: whitetail deer—140; mule deer—165; wapiti—330; moose—150; pronghorn antelope—70; bighorn sheep—175; rocky mountain goat—47.

Since the purpose of the Department's competition is to record all outstanding trophies taken in Montana, no time limit has been set. Awards in the form of certificates will be given to trophies ranking first, second and third for each category. For more information and a scoring sheet for your trophy, write the Montana Fish and Game Department, Helena.



SCORES AND MEASUREMENTS

ANTELOPE—World's Record Score: 101-6/8

	Score	Horn Length		Basal Circumference		Prong Length	
		R	L	R	L	R	L
Waldo Clark, Twin Bridges	88 4-8	17"	17 1-8"	7 3-8	7 3-8	5"	5"
Gordon Spears, Miles City	83 2-8	16 6-8	17 2-8	6 5-8	6 5-8	5	5
Bob Kilpatrick, Jr., Laurel	78 6-8	16 7-8	17	6 4-8	6 4-8	4 3-8	4 4-8

BIG HORN SHEEP—World's Record Score: 207-2/8

	Score	Greatest Spread	Tip to Tip	Length	
				R	L
Don Forbes, Avon	182	21 2-8	17 6-8	38	37 6-8
S. J. Uleberg, Great Falls	179 5-8	21 4-8	18 4-8	39 2-8	39 7-8
Hugo Martin, Bozeman	170 1-8	22 4-8	20	35 2-8	35 4-8

MULE DEER—World's Record Score: 203-7/8

	Score	Greatest Spread	Inside Spread	Length	
				R	L
George Roudebush, Shaker Heights, Ohio	182 6-8	26 4-8	23 4-8	22 6-8	23 4-8
Lewis Hall, Helena	171 4-8	25 2-8	19 7-8	23 1-8	23 4-8
Walt Ritter, Trego	162 2-8	30	26	21 4-8	23 4-8

ROCKY MOUNTAIN GOAT—World's Record Score 56-6/8

	Score	Greatest Spread	Tip to Tip Spread	Length	
				R	L
Basil Ashcraft, Helena	48 2-8	7 4-8	6 6-8	9 5-8	9 5-8
Ray J. Aldrich, Helena	48	6 2-8	5 2-8	10	9 6-8
L. D. Buhmann, Zurich	46 4-8	7	6 6-8	9 1-8	9 1-8

WAPITI—World's Record Score: 441-6/8

	Score	Greatest Spread	Inside Spread	Length of Main Beam	
				R	L
Jess Kilgore, Three Forks	339 2-8	49	48 7-8	46 7-8	48
Mrs. Lou Sweet, Butte	368	49 6-8	43 6-8	50 2-8	50 2-8
Ray Kuhns, Helena	355 7-8	54 5-8	43 1-8	51	54 1-8

WHITETAIL DEER—World's Record Score: 180-6/8

	Score	Greatest Spread	Inside Spread	Length of Main Beam	
				R	L
Augie Lutz, Helena	155 1-8	18 4-8	16 6-8	21 6-8	23

SHIRAS MOOSE—World's Record Score: 205-1/8

	Score	Spread	Palm Width		Palm Length		No. Normal Points	
			R	L	R	L	R	L
Dr. G. I. Podobnikar, Butte	166 6-8	40	9 3-8	10 2-8	36	36	11	11

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